SECTION 05063

STAINLESS STEEL

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LANL MASTER CONSTRUCTION SPECIFICATION

When editing to suit project, author shall add job-specific requirements and delete only those portions that in no way apply to the activity (e.g., a component that does not apply). To seek a variance from applicable requirements, contact the LEM Mechanical POC.

When assembling a specification package, include applicable specifications from all Divisions, especially Division 1, General Requirements.

Information within "stars" is provided as guidance to the author responsible for revising the specification. Delete information within "stars" during editing.

This specification serves as a template. The specification was prepared by an organization operating under a quality assurance program that meets the requirements of 10 CFR 830 (suitable for ML-1 through ML-4 projects). Implementation of this specification requires modification to the specification to meet project-specific requirements. Responsibility for application of this specification to meet project-specific requirements lies with the organization modifying or implementing the specification. The organization modifying the specification shall apply a graded approach to quality assurance based on the management level designation of the project. When this specification is used with nuclear facilities subject to 10 CFR 830, modification to this specification must be performed by an individual or organization operating under a quality assurance program that meets the requirements of that CFR.
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This section defines the technical requirements for the 300 series stainless steels, including 304, 304L, 316, and 316L. Lack of inclusion of other alloys of stainless steel do not preclude their use. In that case, additions to this specification are necessary.
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PART 1 GENERAL

1.1 SUMMARY

A. Section includes

This section defines the technical requirements for forms of stainless steel as follows:

1. Sheet
2. Plate
3. Bars
4. Structural Shapes
5. Structural Tubing
6. Piping and Tubing
7. Forgings and Castings

B. Section does not include

1. Compression fittings

C. Related Sections

1. Section 01330, Submittal Procedures

2. Section 01630, Product Options and Substitutions

1.2 REFERENCES

A. ASTM A182: Standard Specification for Forged or Rolled Alloy Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service

B. ASTM A240: Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

C. ASTM A249: Standard Specification for Welded Austenitic Steel Boiler, Superheater, Heat-Exchanger, and Condenser Tubes

D. ASTM A269: Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service

E. ASTM A276: Standard Specification for Stainless Steel Bars and Shapes

F. ASTM A312: Standard Specification for Seamless and Welded Austenitic Stainless Steel Pipes

G. ASTM A479: Standard Specification for Stainless Steel Bars and Shapes for use in Boilers and other Pressure Vessels

H. ASTM A480: Standard Specification for General Requirements for Flat Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip

I. ASTM A511: Standard Specification for Seamless Stainless Steel Mechanical Tubing

J. ASTM A554: Standard Specification for Welded Stainless Steel Mechanical Tubing

1.3 DEFINITIONS

A. Certified Material Test Report (CMTR) -- Document issued and authenticated by the material manufacturer, defining the chemical composition, mechanical properties and heat treatment of a material. Provide Certification that defines applicable material specification, Purchase Order number, manufacturer's order number and applicable heat or lot number.

1.4 SUBMITTALS

A. Submit the following in accordance with Section 01330, Submittal Procedures:

1. Certified Material Test Reports (CMTR). Certificates of Conformance (CoC) may be provided in lieu of CMTRs, when CMTRs are not available from the mill or subtier supplier. Where approved by LANL prior to submittal, CoCs may be submitted in lieu of CMTRs.

2. Material Safety Data Sheets (MSDS) or independent lab test reports indicating chloride content for, but not limited to, the following items used by the supplier or manufacturer that comes in contact with the material:

a. Compounds

b. Cleaning solvents

c. Liquids

d. Tape adhesive

e. Marking pens

1.5 QUALITY ASSURANCE/ QUALITY CONTROL

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Invoke quality requirements appropriate for the specific use of the finished product. For example, use Section 11610, Gloveboxes, as a model for content to be inserted here when glovebox-like items are required that are not addressed in 11610.
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1.6 MATERIAL CONTROL

A. Material Control Procedure

1. Implement provisions to ensure that materials used or supplied are not counterfeit or of other suspect origin.

B. Carbon Contamination

1. Perform cutting with mechanical shop tools, plasma arc, laser, or water jet. Do not use carbon arc or iron powder cutting on stainless steel.

2. Use wire brushes made of stainless steel. Ensure grinding wheels and wire brushes are new or previously used only on stainless steel.

3. Do not allow carbon steel materials to come into contact with stainless steel materials.

PART 2 PRODUCTS

2.1 PRODUCT OPTIONS AND SUBSTITUTIONS

A. Comply with Section 01630, Product Options and Substitutions

2.2 MATERIALS

A. Use only virgin (non-reprocessed) materials.

B. Stainless Steel Sheet

1. Provide stainless steel sheet per ASTM A240 and in accordance with the surface finish requirements of ASTM A480. Refer to ASTM A480 for ordering information.

C. Stainless Steel Plate

1. Provide stainless steel plate per ASTM A240 and in accordance with the surface finish requirements of ASTM A480. Refer to ASTM A480 for ordering information.

D. Stainless Steel Bars

1. Provide stainless steel bars including round, flat, square, and hexagonal per ASTM [A276, A479].

E. Stainless Steel Structural Shapes

1. Provide stainless steel structural shapes including channel, I-beam, and L-angle per ASTM [A276, A479].

2. Equivalent shapes may be fabricated by bending the appropriate sheet or plate stock, with prior LANL approval.

F. Stainless Steel Structural Tubing

1. Provide stainless steel square and rectangular tubing per ASTM [A511, A554].

G. Stainless Steel Tubing

1. Provide stainless tubing per ASTM [A249, A269].

H. Stainless Steel Pipe

1. Provide stainless pipe per ASTM [A312, A376].

I. Stainless Steel Forgings and Castings

1. Provide forgings per ASTM A182.

2. Castings are permitted for Class 150 rated pipe elbows only if specified on the contract drawings.

PART 3 EXECUTION

3.1 CHLORIDE CONTENT CONTROL

A. Avoid chloride-bearing compounds, cleaning solvents, tape adhesive, liquids, and marking pens. If used, they are to contain no more than 250 ppm by weight chloride and are to be completely removed by thorough cleaning.

END OF SECTION

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Do not delete the following reference information.

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FOR LANL USE ONLY

This project specification is based on LANL Master Construction Specification Rev. 0, dated December 5, 2002.